# SCIENCE.

FRIDAY, DECEMBER 17, 1886.

## *COMMENT AND CRITICISM.*

IN A PAPER presented to the American philosophical society, Dr. Brinton of the University of Pennsylvania has developed some considerations concerning a form of writing intermediate between the iconographic and the alphabetic. This intermediate form of writing Dr. Brinton calls ikonomatic, since that to which the figure or picture refers is not the object represented, but the name of that object. In this ikonomatic writing, which Dr. Brinton finds in the Mexican and probably in the Maya hieroglyphics, he sees the explanation of the process by which the great advance was made from thought-writing to sound-writing. Thought-writing, we are told, is the oldest and simplest form, and is subdivided into iconographic and symbolic. In iconographic writing the object thought of is represented by a more or less skilfully drawn picture, while in symbolic writing a single characteristic serves to represent the object; as, for example, the track of an animal is represented instead of the animal itself.

---

Of course, the gap between this thought-writing and sound-writing is enormous, and endeavors have been made to explain how it was bridged by a study of the Egyptian and Chinese alphabets, each of which began as simple picture-writing, and developed into almost complete phoneticism. Dr. Brinton calls in ikonomatic writing to explain the transition. In this form of communication the picture or sign does not refer to a sound as the name of the object in question, but to the sound of the name of some other object or idea. The plan is that pursued by the constructors of rebuses, who, to use Dr. Brinton's illustration, can represent the infinitive 'to hide' by the figure 2 and a skin or hide. Of this system, Dr. Brinton finds several sets of instances, and says that there is little doubt that all the Egyptian syllabic and alphabetic writing was derived from this early phase of which the governing principle was that of the rebus. He finds evidence of this in mediaeval heraldry also.

One of the earliest stimuli to the development of phonetic writing was, Dr. Brinton thinks, the wish to record proper names, which, when we rise above the savage state, are not usually significant; and therefore, if recorded at all, they must be recorded phonetically. The Mexicans added to their ikonomatic system a feature peculiar to themselves in assigning a phonetic value to colors. The Egyptian sign-writing is also polychromatic, but the polychromes seem not to have had any phonetic value. So in heraldry, while colors have definite significations, these are seldom phonetic. But the Mexican writing offers many instances where the color of the object as pictured is an essential phonetic element of the sound which is intended to be conveyed. The Aztecs developed the ikonomatic system beyond proper names, and composed in it words, sentences, and treatises on various subjects. Outside of these races, Dr. Brinton finds evidence of but very slight progress toward a phonetic system made by natives of the American continent.

---

'BOVINE TUBERCULOSIS' was the subject of a paper read by Dr. Blaine of Willard asylum, Ovid, N.Y., before the New York academy of medicine recently. In the paper and the remarks upon the same by Dr. Edson, of the New York health department, attention was called to the prevalence of consumption in cattle, and to the danger of human beings contracting the disease through the milk and meat of infected animals. As we have already repeatedly pointed out, there is but one way to prevent the sale and use of such meat and milk, and that is by a rigid inspection of the cows at the stables where they are kept, and of the carcasses at the slaughter-houses before the viscera are removed. Tuberculous milk cannot be distinguished from that which is non-tuberculous, and the most thorough expert examination of the meat of a tuberculous animal will not suffice to exclude such meat from the market unless the inspector can also examine the lungs and other internal organs in which the disease manifests itself. The cow-stable being situated, for the most part, in the country, the inspection of these should be performed by officers of the State board of health; while the slaughter-houses, being in the

cities, should be rigidly watched by experienced veterinarians, who should be on duty continuously at these slaughter-houses, in order that no single animal can be sold for meat until it has been examined. A long experience in this matter has satisfied the writer that no confidence can be safely put in the slaughterers as a class. They will, without any compunction whatever, kill and sell the most diseased animals, and do not hesitate to put upon the market even the flesh of new-born calves, and of those that have died from disease. It will be an expensive matter, it is true, to station a competent veterinary surgeon at each of the slaughter-houses in these great cities; but the interests of the public health demand it, and they should be kept there continuously. The work will then not be done as efficiently as if public *abattoirs* were established on the river-front, and the slaughter-houses now scattered throughout the cities abandoned.

---

IT IS WELL KNOWN that the senses are subject to normal deceptions (*sinnes taüchungen*), which seem to be inborn in the structure of the nervous system and the sense-organs. In some respects the world that we piece together from our judgments and sensations proves to be somewhat different from the world to which we apply the foot-rule and plumb-line, which we weigh and measure by objective standards. The science whose business it is to discover the nature of these discrepancies is psychophysics. M. Sorel, in a recent article (*Revue philosophique*, October, 1886), calls attention to the wide practical bearing of this study, shows how it was taken into account by the Greek architects, and how it modifies our aesthetic conceptions. He looks forward to the time when all these deceptions will be quantitatively determined, and applied in every-day life. Not only will we have a real psychophysic law (or laws), but perhaps also the signs of practical consulting psychophysicists will grace our streets.

---

THE MEETING OF THE NATIONAL PRISON association at Atlanta this year seems to have been very successful. The opening addresses by ex-President Hayes and Mr. Henry W. Grady of the *Atlanta constitution* were very well received, the latter especially calling forth strong expressions of approval. The various discussions on prison architecture, prison diet, the prison physician, the paroling of prisoners, reformatories, and prison labor, were ably introduced and well conducted. The debate on prison labor seems to have excited most interest. Warden McClaughry of Joliet had the courage to defend the contract system, and regretted the action of the people of Illinois in adopting at the last election a constitutional amendment prohibiting it. Warden Brush of Sing Sing made an eminently sensible remark when he said that discussions about forms of prison labor were of little use just now, when a cyclone is sweeping over the country, and agitators are striving to put an end to all prison labor, whatever its form. It was in this discussion that Dr. Tucker created a sensation not only by defending the lessee system as practised at the south, but by pronouncing a panegyric on it. He claimed that the lessee system is the best possible, and made a number of extremely foolish and absurd remarks about the 'psychological repulsion' between races, and in closing demanded the utmost severity of punishment compatible with the convicts' physical health. He went so far as to declare that the chain-gang is the negro's paradise.

---

Dr. Sims of Chattanooga, who had two days before made an argument for the abolition of the lessee system, which is reported as being very cogent, made a brief answer to Dr. Tucker, and, while granting that the lessee system in Georgia is better managed than elsewhere, repeated the conclusions reached by his previous argument. Dr. Tucker had asserted, after telling his hearers that the penal features of the lessee system are too severe for whites and not severe enough for colored persons, that the death-rate of Georgia prisoners was 8.8 in the thousand. Warden Brush called attention to the official report of the state penitentiary, which showed a death-rate of 30 per thousand; but all the answer Dr. Tucker would vouchsafe was, 'My arithmetic is right.' The truth is, that the lessee system of convict labor is barbarous and inhuman; and the wonder is, that any self-respecting man could publicly defend it, especially before such a body as the National prison association.

---

Mr. Wines, writing in the *International record of charities and correction*, says that the tendency of thought in the prison association becomes more apparent each year. The keynote of all the discussions is that felons who pursue crime as a vocation, or are driven to it by an irresistible natural

impulse, should be permanently incarcerated for the security of society. This implies a distinction between the incorrigible and the corrigible; and the possibility of reformation and establishment of reformatory discipline in prisons follow as matters of course. In Mr. Wines's own language, "Life sentences for recidivists, indeterminate sentences for first offenders, the mark system, the progressive classification of prisoners, conditional liberation, improved facilities for education in prison, the reformation of our system of prison labor, — all of these are parts of the sifting process by which we seek in the end to eliminate from the community the dangerous elements in society." This is an inspiring programme, and, when the reformers convince our legislatures of its practicability, undoubtedly much will be gained. But we do not hesitate to say, that, as a rule, we find, in the opinions of prison-reformers, too much theory and too little practicality. They are on the right road, but their progress is slower than it need be, on this very account.

---

THE DEBT WHICH the sciences of ethnology and linguistics owe to missionary labors has never been adequately acknowledged. The latest recognition of its value, though well meant and instructive, is still imperfect. Dr. R. N. Cust's monograph, 'Language as illustrated by Bible translations' (London, *Trübner*, 1886), displays the scholarship and research which would be expected from the author. He gives a classified list of versions, arranged according to the various families of languages, from which it appears, that since the establishment of the British and foreign Bible society, in 1803, the missionaries of that society and of similar associations in Great Britain, the United States, and other Protestant countries, have translated the Bible or portions of it into no less than two hundred and ninety languages and dialects. Of these, forty-nine belong to Europe, one hundred and one to Asia, sixty to Africa, thirty-eight to America, and forty-one to Oceania. Adding the older versions (some of which have been republished under missionary revision), we have a total of three hundred and twenty-four translations in the catalogue of Dr. Cust. This, however, by no means exhausts the list. His plan excludes reference to the Roman-Catholic versions, which are numerous — if not of the whole Bible, at least of portions of it. Eliot's Indian Bible, though mentioned (not quite accurately) in the text of the monograph, does not appear in the list. Nor is any thing said of the vast number of grammars, dictionaries, and vocabularies, or the versions of catechisms and similar works, — in many more languages than are included in his list, — which we owe to these zealous laborers, of almost every Christian denomination. In spite of these limitations, however, Dr. Cust's memoir will be a most useful manual of reference for philologists. It is to be hoped that he will supplement it, as he is probably better able to do than any one else, by an additional list, comprising these other missionary publications, which will be helpful to students. Prof. Max Müller has shown that the foundation of the science of comparative philology was laid in the great work of the Jesuit missionary Hervas, — his 'Catalogue of languages,' in six volumes, published in Spanish in the year 1800, and derived mainly from the results of missionary researches. The distinguished professor himself, and the other eminent philologists of our day, — a list which includes such names as F. Müller, Gerland, Latham, Farrar, Sayce, Hovelacque, Charencey, Whitney, Brinton, Trumbull, and many hardly less noted, — who have reared upon this basis such a noble superstructure, will be the first to admit that their work owes its extent and value chiefly to the materials supplied by the later efforts of these enlightened and indefatigable toilers.

---

A STRIKING PROOF of the growth of scientific studies at Harvard is given in the recent report of the Museum of comparative zoölogy. Although it is within three years that the latest addition to its building has been occupied, it has already become too crowded for the needs of the university. This addition completed the first wing of the great structure originally contemplated by Agassiz, and gave a massive building nearly three hundred feet long and five stories high, with about a hundred thousand square feet of flooring, or the equivalent of seventy rooms, thirty by forty-five feet in dimensions. The new portion, nearly a third of the whole, is entirely devoted to offices, library, and purposes of instruction; and yet the curator, Mr. Agassiz, in his recent report to the president and fellows, reports that "the unexpected demand for instruction is in excess of our accommodation. . . . It will be absolutely essential, in order to maintain the unity of organization on which so much care and money have

been expended, to provide additional quarters for the accommodation of the increasing number of students, and the natural demands for expansion in the specialties of each department. At the present moment an additional section of the museum would barely meet our requirements." We understand that work will commence on this another season. Nor is the interest wholly confined to the students. Most of the exhibition-rooms having been thrown open to the public, the number of visitors has greatly increased, so that it has become necessary to begin the erection of a large portico-front to the main entrance on the middle of the south side, and to transfer to it the staircases, which are now wholly insufficient to accommodate the stream of visitors. At the same time it will greatly relieve the now somewhat barren façade of the building.

---

THE NOVEMBER IOWA WEATHER bulletin, by Dr. Gustavus Hinrichs, closes with an intimation of the character of the coming winter. "The probability is very high that the winter now begun will be a mild one in Iowa and the north-west. The very fact that the last two winters have been severe ones greatly increases the probability stated. It should, however, not be forgotten that even the mildest of Iowa winters has spells of severe weather and blizzards." We must not infer from this that Dr. Hinrichs has any intention of competing with such long-range weather prophets as Mr. Blake, editor of a self-complacent sheet called the *Future*, or others of that class. The prediction here quoted is probably based simply on the fact that the mean temperature of a region for a long term of years is essentially constant, and hence severe winters will generally be compensated by mild ones; but studies of this kind in Europe show that any rules thus based are very often broken. No one could safely order a smaller supply than usual of winter coal, or attempt to make a corner in ice, on such indications, especially as the term 'mild winter' is not considered incompatible with some spells of severe weather and blizzards. Severe winters may, on the other hand, have low mean temperatures, while they are relatively free from heavy snows, which form the chief element of severity in the mind of a railroad superintendent.

---

## *ISAAC LEA, LL.D.*

DR. ISAAC LEA, the Nestor of American naturalists, died at his home in Philadelphia on the 8th instant. Dr. Lea was born in Wilmington, Del., March 4, 1792. He was of Quaker descent, his ancestors coming from Gloucestershire, England, with William Penn on his second visit. His taste for natural history exhibited itself at an early period, and was fostered by his mother, who was fond of botany, and by his association with Vanuxem, then a youth, who was devoted to mineralogy and geology, then hardly organized as sciences. Their studies were undirected, and only in 1815 did they become members of the Academy of natural sciences, then about three years old. Lea forfeited his birthright in the Society of friends by joining a company raised for the defence of the country, in 1814, though the organization was never called into service. Though engaged in learning mercantile business, young Lea became an active member of the academy, and published a mineralogical paper in its journal in 1817. This was followed by a very long series of contributions to mineralogy and conchology, recent and fossil, which have made his name familiar to naturalists all over the world. He married, in 1821, Miss Frances A. Carey, the daughter of Mathew Carey, the well-known economist, and became a member of the publishing-house of Carey & sons, from which he retired in 1851. Mr. Lea's married life was exceptionally long and happy, lasting fifty-two years, and blessed with two sons and a daughter, who still survive.

In 1825 began those studies of the fresh-water and land shells, especially the Unios, with which Dr. Lea's name will always be associated. In 1827 he published his first paper on the genus Unio. In 1836 he printed his first 'synopsis' of the genus, a thin octavo of fifty-nine pages. The fourth edition of this work appeared in 1870, when it had grown to two hundred and fourteen pages quarto.

Dr. Lea was a member of most American and many foreign scientific societies. He visited Europe, and studied his favorite mollusks at all the museums, where he made the acquaintance of Férussac, Brongniart, Gay, Kiener, and other distinguished men, whose names now sound like echoes of a past epoch.

In 1833 Dr. Lea published his 'Contributions to geology,' at that time the best illustrated paleontological work which had ever appeared in the United States, the text of which was remarkable for the care and judgment evinced in its preparation. Up to 1874 he continued ever busy; and the number of new forms, recent and fossil, made known by him, amounts to nearly two thousand. His activity continued almost unabated up to some ten years ago. Not content with figuring